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Promising strains can be screened for temperature tolerance by inoculating the strains into 250 ml shaker flasks containing 50 ml of culture media. These cultures are then incubated for 2 days on the shaker table over any desired temperature range from most practically between 27°-48°C, one culture at each 3°C interval. Production can be quantified as the total amount of fatty acids produced per ml of culture medium. Total fatty acids can be quantified by gas chromatography as described above. A similar process can also be employed to screen for salinity tolerance. For salinity tolerance a range of salinities yielding conductivities from 5-40 mmho/cm is adequate for most purposes. Screening for the ability to utilize a variety of carbon and nitrogen sources can also be conducted employing the procedure outlined above. The carbon and nitrogen sources were evaluated herein at concentrations of 5 g/l. Carbon sources evaluated were: glucose, corn starch, ground corn, potato starch, wheat starch, and molasses. Nitrogen sources evaluated were: nitrate, urea, ammonium, amino acids, protein hydrolysate, corn steep liquor, tryptone, peptone, or casein. Other carbon and nitrogen sources can be used, the choice being open to those of ordinary skill in the art, based on criteria of significance to the user.

IN THE CLAIMS:

Please amend Claims 54-66 as follows (unamended independent Claim 53 is reiterated below for the convenience of the Examiner):

53. (Reiterated) A process for producing lipids comprising:

(a) growing euryhaline microorganisms in a fermentation medium, wherein said euryhaline microorganisms are capable of producing about 1.08 grams per liter per day of long chain omega-3 fatty acids per 40 grams of sugar per liter at a sodium ion concentration of 60% seawater; and

(b) extracting lipids from said euryhaline microorganisms.

2 54. (Once Amended) The process of Claim 53, wherein said euryhaline microorganisms have exponential growth rates of at least about 5 doublings per day at 25 °C.

3 55. (Once Amended) The process of Claim 53, wherein said euryhaline microorganisms have exponential growth rates of at least about 7 doublings per day at 30 °C.

4 56. (Once Amended) The process of Claim 53, wherein said euryhaline microorganisms are microorganisms of the order Thraustochytriales.

5 57. (Once Amended) The process of Claim 56, wherein said euryhaline microorganisms are selected from the group consisting of *Thraustochytrium*, *Schizochytrium*, and mixtures thereof.

6 58. (Once Amended) The process of Claim 57, wherein said euryhaline microorganisms are selected from the group consisting of ATCC 20888, ATCC 20889, ATCC 20890, ATCC 20891, ATCC 20892, and mixtures thereof.

1 56. (Once Amended) The process of Claim 53, wherein about 20% or less of the total fatty acids in said lipids are omega-6 fatty acids.

1 86. (Once Amended) The process of Claim 53, wherein at least about 49% of the total fatty acids of said lipids are omega-3 fatty acids.

*out* 1 61. (Once Amended) The process of Claim 53, wherein the ratio of DHA to EPA in said lipids is about 7.07 or less.

*C* 1 1062. (Once Amended) The process of Claim 53, wherein at least about 64.5% of omega-3 fatty acids in said lipids is DHA.

*B* 1 1163. (Once Amended) The process of Claim 53, wherein at least about 86% of omega-3 fatty acids in said lipids is DHA.

1 1264. (Once Amended) The process of Claim 53, wherein the ratio of EPA to DHA in said lipids is from about 1:1 to about 1:30.

1 1365. (Once Amended) The process of Claim 53, wherein the ratio of DPA to DHA in said lipids is at least about 1:12.

1 1466. (Once Amended) The process of Claim 53, wherein the total fatty acid composition in said lipids comprises about 5% or less of C20:4w6 fatty acid.